

1 WHAT IS CLAIMED IS:

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3 1. An antioxidant system comprising:

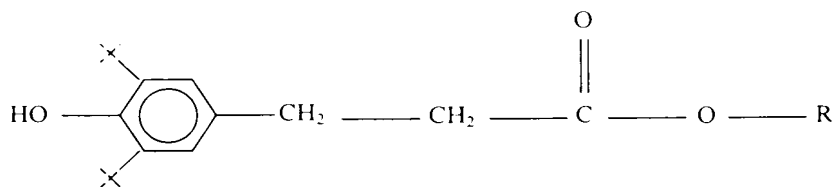
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5 a. sulfurized isobutylene and

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7 b. one or more hindered phenols.

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9 2. An antioxidant system of Claim 1 wherein the hindered phenols  
10 comprise BHT and 3,5-di-t-butyl 4-hydroxy phenol propionate.

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12 3. An antioxidant system of Claim 1 wherein the hindered phenols  
13 comprise BHT.

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15 4. An antioxidant system of Claim 1 wherein one or more hindered  
16 phenols have the general formula:



22 5. An antioxidant system of Claim 4, wherein the antioxidant system  
23 further comprises BHT.

24  
25 6. An antioxidant system of Claim 1 wherein the one or more hindered  
26 phenols comprise 3,5-di-t-butyl 4-hydroxy phenol propionate.

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28 7. Lubricating oil comprising a base oil and the antioxidant system of  
29 Claim 1.

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31 8. Lubricating oil comprising a base oil and the antioxidant system of  
32 Claim 2.

- 1 9. Lubricating oil comprising a base oil and the antioxidant system of  
2 Claim 3.  
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- 4 10. Lubricating oil comprising a base oil and the antioxidant system of  
5 Claim 4.  
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- 7 11. A method of lubricating engines comprising contacting the lubricating  
8 oil of Claim 7 with one or more engines.  
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- 10 12. A method for making a lubricating oil comprising combining the  
11 antioxidant system of Claim 6 with base oil in any order.  
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- 13 13. A method of lubricating engines comprising lubricating one or more  
14 engines with the lubricating oil of Claim 8.  
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- 16 14. A method of lubricating engines comprising contacting one or more  
17 engines with the lubricating oil of Claim 9.  
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- 19 15. A method of lubricating engines comprising contacting one or more  
20 engines with lubricating oil of Claim 10.  
21
- 22 16. A method of Claim 15 wherein the engine is a natural gas fueled  
23 engine.  
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- 25 17. Lubricating oil comprising:  
26  
27 about 1 wt. % to about 8 wt. % of one or more dispersants;  
28  
29 about 1 wt. % to about 8.5 wt. % of one or more detergents;  
30  
31 about 0.2 wt. % to about 1.5 wt. % of one or more wear inhibitors;  
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33 about 0.01 wt. % to about 0.5 wt. % sulfurized isobutylene;

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about 0.1 wt. % to about 3 wt. % butylated hydroxy toluene;  
and about 0.1 wt. % to about 3 wt. % 3,5-di-t-butyl 4-hydroxy phenol propionate.

18. A method of lubricating engines comprising lubricating one or more engines with the lubricating oil of Claim 17.

19. A method of making the lubricating oil of Claim 17 comprising combining;

about 1 wt. % to about 8 wt. % of one or more dispersants;  
about 1 wt. % to about 8.5 wt. % of one or more detergents;  
about 0.2 wt. % to about 1.5 wt. % of one or more wear inhibitors;  
about 0.01 wt. % to about 0.5 wt. % sulfurized isobutylene;  
about 0.1 wt. % to about 3 wt. % butylated hydroxy toluene; and  
about 0.1 wt. % to about 3 wt. % 3,5-di-t-butyl 4-hydroxy phenol propionate in any order.

20. Lubricating oil comprising:  
a major amount of one or more base oils;  
about 1.25 wt. % to about 6 wt. % of one or more dispersants;  
about 2 wt. % to about 6 wt. % of one or more detergents;

1 about 0.3 wt. % to about 0.8 wt. % of one or more wear inhibitors;  
2  
3 about 0.02 wt. % to about 0.45 wt. % sulfurized isobutylene;  
4  
5 about 0.20 wt. % to about 2.5 wt. % butylated hydroxy toluene; and  
6  
7 about 0.20 wt. % to about 2.5 wt. % 3,5-di-t-butyl 4-hydroxy phenol  
8 propionate.  
9

10 21. A method of lubricating engines comprising contacting one or more  
11 engines with the lubricating oil of Claim 20.  
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13 22. A method of making the lubricating oil of Claim 20 comprising  
14 combining:  
15 a major amount of one or more base oils;  
16  
17 about 1.25 wt. % to about 6 wt. % of one or more dispersants;  
18  
19 about 2 wt. % to about 6 wt. % of one or more detergents;  
20  
21 about 0.3 wt. % to about 0.8 wt. % of one or more wear inhibitors;  
22  
23 about 0.02 wt. % to about 0.45 wt. % sulfurized isobutylene;  
24  
25 about 0.20 wt. % to about 2.5 wt. % butylated hydroxy toluene; and  
26  
27 about 0.20 wt. % to about 2.5 wt. % 3,5-di-t-butyl 4-hydroxy phenol  
28 propionate in any order.  
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30 23. Lubricating oil comprising:  
31  
32 a major amount of one or more base oils;  
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1 about 1.25 wt. % to about 6.00 wt. % of one or more dispersants;  
2  
3 about 2 wt. % to about 6 wt. % of one or more detergents;  
4  
5 about 0.30 wt. % to about 0.80 wt. % of one or more wear inhibitors;  
6  
7 about 0.02 wt. % to about 0.45 wt. % sulfurized isobutylene,  
8  
9 about 0.20 wt. % to about 2.5 wt. % butylated hydroxy toluene;  
10  
11 and about 0.20 wt. % to about 2.50 wt. % 3,5-di-t-butyl 4-hydroxy  
12 phenol propionate.  
13  
14 24. A method of lubricating engines comprising contacting one or more  
15 engines with the lubricating oil of Claim 23.  
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17 25. Lubricating oil for use in engines comprising sulfurized isobutylene.  
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19 26. Method of lubricating natural gas engines comprising contacting the  
20 lubricating oil of Claim 25 with one or more natural gas engines.  
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22 27. Lubricating oil comprising:  
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24 about 0.02 wt. % to about 2 wt. % sulfurized isobutylene;  
25  
26 about 1 wt. % to about 8 wt. % of one or more dispersants;  
27  
28 about 1 wt. % to about 8.5 wt. % of one or more of phenates,  
29 salicylates and sulfonates;  
30  
31 about 0.2 wt. % to about 1.5 wt. % of one or more wear inhibitors; and  
32 one or more of Group I, II, III and IV base oil.  
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- 1 28. A method of making the lubricating oil of Claim 27 comprising blending  
2 about 0.02 wt. % to about 2 wt. % sulfurized isobutylene;  
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4 about 1 wt. % to about 8 wt. % of one or more dispersants;  
5  
6 about 1 wt. % to about 8.5 wt. % of one or more of phenates,  
7 salycilates and sulfonates;  
8  
9 about 0.2 wt. % to about 1.5 wt. % of one or more wear inhibitors; and  
10  
11 one or more of Group I, II, III and IV base oil in any order with agitation  
12 and at a temperature sufficient to blend the components but not high  
13 enough to degrade the components.  
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- 15 29. A method of lubricating an engine comprising lubricating the engine  
16 with the lubricating oil of Claim 27.  
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- 18 30. Lubricating oil comprising:  
19  
20 a major amount of one or more base oils;  
21  
22 about 1.25 wt. % to about 6 wt. % of one or more dispersants;  
23  
24 about 2 wt. % to about 6 wt. % of one or more detergents;  
25  
26 about 0.3 wt. % to about 0.8 wt. % of one or more wear inhibitors; and  
27  
28 about 0.04 wt. % to about 1.75 wt. % sulfurized isobutylene.  
29
- 30 31. A method of making the lubricating oil of Claim 30 comprising  
31 combining about 1.25 wt. % to about 6 wt. % one or more dispersants;  
32  
33 about 2 wt. % to about 6 wt. % of one or more detergents;

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2 about 0.3 wt. % to about 0.8 wt. % of one or more wear inhibitors; and

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4 about 0.04 wt. % to about 1.75 wt. % sulfurized isobutylene

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6 in any order.

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8 32. A method of lubricating engines comprising contacting the lubricating  
9 oil of Claim 30 with one or more engines.